

Health and environmental applications of integrating low power sensors with wireless technology

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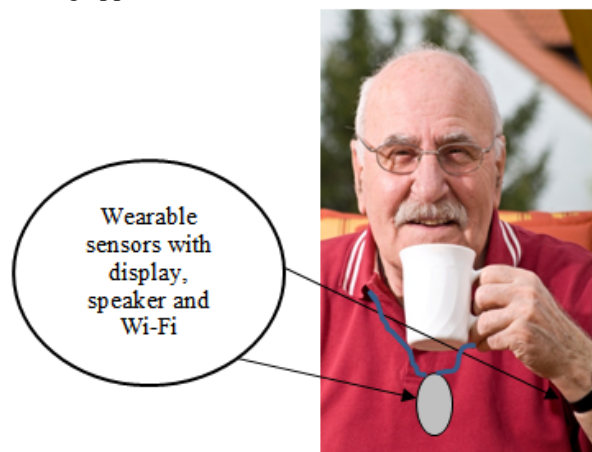
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This work describes a platform technology being developed with the integration of low-power, miniature sensors with wireless technology to enable independent living by enhancing health and environmental monitoring and communication for seniors, allowing them to lead a high quality life while maintaining their independence. The technology can help improve safety, productivity, and social integration along with reduced senior care costs associated with assisted living centers and hospitals.

The integrated platform consists of a wearable personal monitor in a wristband, button or pendant form and functions as an intelligent sensor capable of monitoring multiple medical and environmental parameters, generating alerts and communicating with others through the cloud. An on-board sensor array tailored to individual medical needs along with a wireless communication system can integrate with home or health care systems [i.e., infrastructure such as the European Netcarity demonstration home system].

The sensor suite can include ambient indicators like temperature, pressure, relative humidity, and CO₂ for comfort, CH₄ for indoor safety, CO for early warning of fire and air quality/health, and vital signs [body temperature, respiration, pulse-oximetry for heart rate and SpO₂ parameters, and blood gases]. The integration of environmental gas sensors and bio-medical sensors with cloud technology can provide a comprehensive solution that can improve daily life, reduce health care costs, alleviate stress for both seniors and care providers and enhance the quality of medical treatment due to the multidimensionality of the medical data that can be collected. The sensors need a required combination of ultra-low power, small size, and low cost as well as performance in order to be successful in distributed sensing applications.



Wearable sensors for health and environmental monitoring